

REMARKS

Pursuant to the present amendment, claims 1 and 11 have been amended. Claims 23 and 24 have been added. No new matter has been introduced by way of the present amendment. Reconsideration of the present application is respectfully requested in view of the amendments and arguments set forth herein.

A teleconference between Examiner Davis and Scott F. Diring was held on December 4, 2006 to discuss the claimed subject matter. Applicants indicated that the prior art only teaches incidental heating while the chamber was being prepared for the oxidation step, and that no separate heat treatment step was present. No agreement was reached.

In the Office Action, claims 1-5 and 11-15 stand rejected under 35 U.S.C. § 102 as allegedly being anticipated by U.S. Patent No. 6,348,736 (McGahay). Claims 7-10 and 17-22 stand rejected under 35 U.S.C. § 103 as allegedly being obvious over McGahay in view of U.S. Patent Publication No. 2002/0090822 (Jiang). Applicants respectfully traverse the Examiner's rejections.

The invention, as set forth in independent claims 1 and 11 includes, among other things, the general features of forming a low-k dielectric layer over a substrate, heat treating the substrate to promote out-gassing of volatile materials for a predetermined period of time after forming the low-k dielectric layer, and converting an upper portion of the low-k dielectric layer into a protective dielectric to form a sacrificial cap layer after heat treating the substrate. Claims 1 and 11 were amended to clarify that the heat treatment is a discrete process step that occurs after forming the low-k dielectric layer and prior to the formation of the sacrificial cap layer. This amendment does not raise new issues as these issues were raised in the previous response. However, Applicants amended claims 1 and 11 to further clarify that a heat treatment occurs

between the formation of the low-k dielectric layer and the formation of the sacrificial cap layer. Claims 23 and 24 were added to include pressure features for the heat treatment.

McGahay fails to teach or suggest heat treating the substrate for a predetermined period of time to promote out-gassing prior to forming the sacrificial cap layer. McGahay does not mention a separate heating treatment step prior to the formation of the cap layer 16, only that the SSQ dielectric layer is exposed to an oxygen containing plasma. The Office Action asserts that the incidental heating that occurs to get the chamber in condition for the oxidization step (*i.e.*, to 400°C) is a heat treatment step. Applicants disagree that this is a heat treatment as set forth in the claimed subject matter. McGahay does not mention a heat treatment step at all, so McGahay cannot teach or suggest heat treating the substrate to promote out-gassing of volatile materials for a predetermined period of time after forming the low-k dielectric layer, and converting an upper portion of the low-k dielectric layer into a protective dielectric to form a sacrificial cap layer after heat treating the substrate. Applicants include distinct out-gassing and cap layer formation steps. McGahay does not teach or suggest heating the substrate for a predetermined period of time to provide an out-gassing interval.

For these reasons, McGahay fails to teach or suggest the claimed subject matter. Accordingly, claims 1, 11, and all claims depending therefrom are allowable. Applicants respectfully request the rejection of these claims be withdrawn.

Jiang fails to correct the defects identified above with respect to McGahay. Specifically, Jiang also teaches a cap layer formation step without a preceding heat treatment out-gassing step. Accordingly, the combination of McGahay and Jiang also fails to teach or suggest the features of the claimed subject matter.

For at least the aforementioned reasons, it is respectfully submitted that all pending claims are in condition for immediate allowance. The Examiner is invited to contact the undersigned attorney at (713) 934-4070 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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/Scott F. Diring/

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